
Space Weather Forecast

Issued on Friday 20 December 2024 at 13:02 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Moderate-class flares likely (Minor-Moderate Radio Blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate activity, with four Moderate class flares from near the eastern limb. There are ten sunspots are currently visible on the Earth-facing disc. The largest and most complex region is expected to rotate over the western limb today. The next most complex region is rotating over the eastern limb and has been responsible for the aforementioned flares. Further regions are due to rotate onto the southeast disc in the coming days. The remaining regions on the disc are smaller and appear magnetically simple.

Solar Wind / Geomagnetic Activity: Solar winds, observed at L1, have been at elevated to slightly elevated levels, with a peak of 520km/s observed at 20/1000 UTC. The Interplanetary Magnetic Field (IMF), Bt, remained weak throughout. The north-south component, Bz, fluctuated between positive and negative. The resulting geomagnetic activity was mostly Quiet to Unsettled (Kp1-3), with a provisional Active interval (Kp4) observed at 20/0000-0300 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate solar activity is forecast with further M-class flares likely, mainly from near the eastern limb. Slight chance of isolated X-class flares is maintained throughout.

Solar Wind / Geomagnetic Activity: Solar winds have now reduced to slightly elevated levels and are expected to gradually decline to background conditions over the next few days. Geomagnetic activity is expected to be Quiet to Unsettled (Kp1-3) throughout, with Active (Kp4) intervals unlikely.

Energetic Particles / Solar Radiation: There is a slight chance of S1/Minor solar radiation storms, in response to any notable solar flares.

Geomagnetic Storms

Geomagnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	5	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 (M Class)	Yes	60	60	65	70
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	15	15	15	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = cm ⁻² sr ⁻¹ s ⁻¹)						